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SOCIETY OF ARTS.

FRIDAY, AUGUST 12th, 1853.

FRENCH PATENTS.

NEVER since the passing of the law in 1791 have there been so many Patents for Inventions taken out in France as during the last eighteen months. It is interesting to watch the progress of this movement; the number of patented discoveries being in some sort a measure of the activity of intellect in the Industrial Arts. The number decreases in times of doubt and hazard, whilst in periods of tranquillity it increases. No one will take the trouble, or put himself to expense, to make researches to bring into practice new ideas, if the position of the country does not afford him a rational hope of fair remuneration for his labours. Looking back previous to the year 1848, the number of applications for patents appears to have reached 2,930 in 1846, and 2,925 in 1847. In the last year (1852), the number had risen to 3,352. Since the 1st of January, 1853, a further and more rapid progress is developed. The number of patents taken out in the half year just past is 1,982, whilst in the corresponding six months of the previous year it was only 1,506. If the same rate of increase is maintained during the current half year, over the number of the corresponding half of last year, as there is every reason to believe, the total number for 1853 will be not less than 4,500. It is curious to observe the relation between the political state of the country and the march of invention. For the facts, let us look at the results of the year 1848. In that year of revolution and disturbance, instead of 2,925 in 1847, there was only 1,220; included in which it must be remembered that 327 belonged to the two first months of that year, leaving in fact for the ten months only 893, or an average of 89 per month; whilst the monthly average for 1847 was 243. The separate statistics for each month of 1848 are still more significant. In the month of March, whilst there existed great hope for the future in the changes which were taking place, there were 117 patents taken out. In April, however, there were but 57. In May, the arbitrary power assumed by the National Assembly put an end to the hopes its establishment had raised, and the industrial world fell into complete disorder, and 47 patents only were applied for. The number still further decreased in July, the effect of the disastrous days which marked the close of June. With the dawn of better days, however, they then gradually increased to the end of the year, with some trifling fluctuations, in October, 110; in November, 130. In the month of December, in spite of the great appeal then made to the electors, the number rose to 155. It was then the Provisional Government ceased, and there was something like a guarantee for order for the future. Notwithstanding this, the monthly average for that half year did not exceed 103; whilst in the corresponding half year of 1849 it reached 180, increasing without a drawback to 279 in 1852. The entire year of 1849 gave a total of 2,022 patents, or 802 more than

that of the preceding year. The numbers are 2,239 in 1850, and 2,530 in 1851, ending with the enormous increase before-mentioned for 1852 and the current year.

It appears that the Department of the Seine is most prolific in patents, that department claiming in 1851, 1,715 out of the total 2,530; and in 1852, 2,266 out of 3,352. For the first six months of this year (1853), 1,363, out of a total of 1,982 belong to the Seine. The next in point of number is the Department of the Rhone, with its noble silk factories. With respect to the Seine, no doubt the large number may be accounted for in some respects by the fact, that individuals are attracted to the metropolis as the centre of science and knowledge; and that before their return, they take out their patent there.

The classification of the patents for 1851 and 1852 amounting in all, after making deduction for "certificates of addition," to 4,323, is as follows:

Machines and apparatus of all kinds	1,395
Chemical arts	820
* "Industries Parisiennes"	768
Philosophical instruments	489
Metals, minerals, stones, &c.	285
Fine arts	195
Agriculture	116
Ceramic arts	85
Textile manufactures	170
Total	4,323

The enormous increase in the number of patents indicates great activity in the industry of France, and augurs well for the display of 1855.

TABLE,

showing the amount of business in the United States*

Patent Office for the eleven years ending with 1851, taken from the Report of the Commissioner of Patents for the year 1851.

Years.	Applications filed.	Caveats filed.	Patents issued.	Cash received.	Cash expended.
				Dollars.	Dollars.
1841	847	312	495	40,413 01	23,065 87
1842	761	291	517	36,505 68	31,241 48
1843	819	315	531	35,315 81	39,776 96
1844	1045	380	502	42,509 26	36,344 73
1845	1246	452	502	51,076 14	39,395 65
1846	1272	448	619	50,264 16	46,158 71
1847	1531	533	572	63,111 19	41,878 35
1848	1628	607	660	67,576 69	58,905 84
1849	1955	595	1076	80,752 78	77,716 44
1850	2193	602	995	86,927 05	80,100 95
1851	2258	760	869	95,738 61	86,916 93

TUBULAR PIPE DRAINS *versus* BRICK SEWERS.

IN consequence of the prevalence of fever at Croydon, at the end of 1852, and the commencement of the present year, where, in a population of about 16,000 persons, about 1,800 cases of fever occurred, with a mortality of about sixty, and very numerous cases of diarrhoea and dysentery, with a mortality of about ten; and to its alleged connection with the works of sewerage and water supply recently executed in that place,—Viscount Palmerston, M.P., Her Majesty's Principal Secretary of

* By this phrase is understood toys, children's games, articles for travelling, sporting, fishing, encamping, hats and caps, artificial flowers, sports, umbrellas, parasols, bed-furniture, brushes, gloves, paper, stationery, &c.

State for the Home Department, directed an inquiry to be instituted by Dr. Neil Arnott and Mr. Thomas Page, C.E., the results of which have just been presented to both Houses of Parliament by Her Majesty's command. In the general Report signed by both these gentlemen, which prefaces the individual Reports as to the medical and engineering parts of the inquiry, it is stated that "the result of our investigations is a conviction that the operations of the plan for the sewerage have been influential in producing the disease." As large sums of money are being expended in all parts of the country in improving the sanitary condition of towns, and as the system adopted at Croydon, and recommended by the General Board of Health, namely, the substitution of pottery pipes for brick sewers, has had a complete trial at that place, which is said to be favourably situated for this system, it is considered that it will be advantageous to give some account of the works there, of the reasons of their failure, and of the comparative merits of tubular pipe drains in place of brick sewers. For this purpose, Mr. Page's elaborate Report will be largely drawn upon.

It appears that early in 1849 Mr. Ranger, one of the Superintending Inspectors of the General Board of Health, was employed to survey and report on the state of Croydon. "He recommended sewerage by stoneware tubes, the greater part of which he anticipated, from the favourable position of the streets, would not exceed eight inches in diameter. He also suggested the application of back drainage for the houses, in preference to sewers laid along the streets; and recommended as sources for water supply, the river and springs of the Wandle." In August, 1849, a Local Board of Health was appointed, and Mr. George Donaldson, one of the Engineers of the Metropolitan Commissioners of Sewers, was engaged to lay down a plan for drainage and water supply; and he, in conjunction with Mr. Cox, the Board's Local Surveyor, also prepared the requisite plans and estimates. These were submitted to the General Board of Health, as required by the Act, and by it referred to Mr. Ranger, who made certain alterations in the plan of the works, which was then passed by the General Board, who stipulated, however, that no outlay should be incurred without a previous certificate from their Superintending Engineer, Mr. Ranger, who somewhere about this time, it would seem, became also Engineer to the Local Board.* The chief alterations in the plan of the works were the reduction of the sizes of the pipe-sewers from six inches to four inches, and from eight and nine inches to six inches, and in the manner of disposing of the sullage, which Mr. Donaldson proposed should be used for irrigation and agricultural purposes, and which, in place thereof, was conducted to a building called the "filter-house." The supply of water and the provision for the drainage appears to have been completed in December, 1851.

Mr. Page in his Report gives the following "features of the works, which the evidence shows are especially open to objection:

"1st. In obstructions in the main sewers and house drains, consequent reflow of sullage into the houses, and all the nuisance and tendency to disease resulting from it, and the annoyance of back drainage.

"2nd. Absence of provision for ventilation, and consequent escape of noxious gases into the houses, and their deleterious effects.

"3rd. The establishment of the screening process at

* A document has just been printed by order of the House of Lords, showing that the Inspectors under the Public Health Act have been employed in twenty-three places as Engineers in carrying out the works, a system which seems scarcely to admit of an efficient Inspectorship as required by the Act.

the filter house, so close to the town as to create a nuisance by the escape of effluvia from it, and from the soil removed from it.

"4th. Pollution of the Wandle, by the discharge of faecal matter into it.

"5th. Nuisance caused by the irrigation of meadows by the liquid sullage.

"6th. The want of sufficient land drainage."

In reference to the first feature, "Mr. Cox returned 51 stoppages in the public sewers; viz., 27 in the sewers of 4 inches in diameter; 20 in the sewers of 6 inches in diameter; 1 in the 12-inch sewers; 1 in the 15-inch sewers, and 2 in the 18-inch sewers. The other witnesses, many of whose house drains had been filled by stoppages in the sewers, consider that in many cases the pipes were too small; that they were laid too level; and that too many bends were made in them, in order to bring them to the backs of the houses. * * *

"One of the causes of the numerous stoppages, and a source of annoyance to the inhabitants, both in the first operations and in the working of the plan, was the system of forming the sewers at the back of the houses, called back drainage, by which the soil from several houses is passed into the same branch drain, a stoppage in which affects all the houses above the point of the obstruction. Whatever advantages there may be in avoiding interruptions in the public streets, caused by breaking them up for examinations of pipes, or to remedy the now rare occurrence of faulty execution in brick sewers, it is certain that for one family to be subjected to annoyance by the neglect of another, * * * must far more than counterbalance such advantages. * * * Practically speaking, if each house have a direct communication with the main sewer, and that main sewer be large enough to carry away all the matter discharged into it, and be well ventilated, no nuisance can occur but from imperfections in the house drains themselves, and the domestic appurtenances attached to them. And for the house drains, the pipes are excellent, when the joints can be made and maintained perfect. But this system is the very reverse of the back drainage."

In regard to the fractures and thickness of the pipes, "it appeared that in three instances the 18-inch pipes had been broken—in two cases to the extent of 10 yards, in another 30 yards, in every case at depths of from 10 to 12 feet, in gravel and clay. In the first instance the broken pipes were replaced by new ones, in the last by brick-work. In another instance, about 5 yards of 15-inch pipe were broken in 20 feet depth of sand or clay; another fracture of 15-inch pipe occurred, but the length is undetermined; and in the last-mentioned, the two 12-inch pipes leading to the outfall in Waterman's Meadow, which were broken to the extent of 100 yards in 11 feet depth of clay, have been repaired, partly by pipes of greater thickness, and partly by pipes protected from the pressure of the earth by slabs of timber supported on brick piers."

In reference to the second feature—the absence of ventilation in the pipe sewers—it is stated, that supposing "an obstruction to occur in a line of branch pipes or mains, the passage to the outfall being barred, and the generation of the gases going on, they soon exert a pressure sufficient to overcome the pressure of water in the syphon trap, and escape by the closets and sinks, where there is least resistance."

Of the third feature, it is said, that "this screening process is also based on a miscalculation; for it is evident that the solids which are caught are but a tithe of the original, which, passing along a line of pipes, jostled by

the scrubbing-brushes and hearth-stones, and other matters partaking of this water-carriage, become mixed with the water before reaching their destination, and are discharged into the river in the form best adapted to poison the water."

In regard to the sixth feature, it is stated that "it is of greater consequence to provide for this where sewerage is effected by impermeable pipes, for if these are perfectly joined, the land water cannot enter; if imperfectly, the sullage can escape. Without other means of land drainage, therefore, they are only fit for draining a town built on a rock. Brick sewers have this advantage, they drain the land wherever they are constructed, they can be made impermeable at the invert where the sullage runs, and permeable in the arch which the sullage does not reach."

Mr. Page then makes some remarks on sewerage by pipes and brick sewers, refers to the size of pipes in various places, and says:

"In drawing your Lordship's attention to the operations of the plan for sewerage at Croydon, it is requisite to premise that in the system of draining towns, under the sanction of the General Board of Health, the use of brick sewers has been abandoned, and earthenware pipes have been substituted, not only for house drains and branch sewers, but for the main sewers themselves. The advocates of the pipe system, and those of the brick sewer system, have each strong opinions upon the advantages of their own system and the disadvantage of the opposite; the arguments of the former resting on the economy in the first cost of the pipes, their self-cleansing capabilities, the consequent avoidance of all decomposition, the rapid transmission by them to the outfall of all substances which will float in water, their eligibility as the 'cheapest means of carrying away the offal, garbage, and rubbish of slaughter-houses, markets, shambles, stables, cow-houses, or manufactories; and also all dirt and filth from the surface of streets, foot pavements, roads, yards, or open spaces by means of jets of water.*' As to the economy of the pipe sewers, it is stated that the saving of cost by the use of them admits of many towns being thoroughly drained, which could not bear the expense of brick sewers; and an illustration is given in the case of Rugby, the sewerage of which, by pipes varying from six inches to twenty inches in diameter, has cost less than 3,600*l.*, but which, by the old system of 'brick sewers of deposit,' would have been 15,000*l.*; and it is stated, that even 'supposing the brick sewers were durable, and pipe sewers not durable, the whole of the pipe sewers laid at Rugby could be pulled up, and renewed every four years, at less expense than the cost and maintenance of the brick sewers.' The advocates of the brick sewers admit an increase in the original cost of the sewers over the small pipes, when the sewers are large enough to admit of internal examination by labourers; but this increase does not apply when the pipes are large; they prefer the brick sewers to the pipes for main sewers, as securing the public from the annoyance of frequent openings, which stoppages in the pipes have occasioned, as affording easy access to the entrance of the house-drains, and preventing the escape of noxious gases into the houses, and of reflow of tide and flood waters in low districts—as being also available for subsoil and surface drainage, whereas the pipe system requires separate drains for the former, and altogether as being better calculated for the convenience of the public than the pipe system, and eventually as economical,—they deny the self-cleansing capabilities of the pipes, and refer to many disadvantages, such as break-

ages, expenses of examination, and replacement, to which this system is subject. The value of the pipes for house-drains and for small branch sewers they do not appear to question."

With the view of arriving at a correct opinion as to the practical working of the pipe system, other sources of information were referred to. From the recent examinations of the pipe sewers at Richmond, Manchester, Leeds, and in London, made by Mr. Bazalgette,* the chief engineer to the Metropolitan Commissioners of Sewers, it appeared that at Richmond, "between October, 1851, and December 11th, 1852, twenty-two cases of cleansings and repairs had been required. Examinations were then made in eleven places indiscriminately, at depths of from 8 feet to 17 feet, to ascertain the state of the pipe sewers; and of these the pipes in five cases were found broken, and in six cases sound. These results were with pipes of good quality, well laid, and with favourable inclinations." At Manchester, "the drains for single houses, originally 6 inches by 4 inches, having been frequently stopped up; pipes 8 inches by 6 inches were substituted, and none of a smaller size are now used for house drains." And again, "Not more than 100 houses are drained into a branch-pipe sewer 16 inches by 12 inches, and not exceeding 600 feet in length." At Salford, "the surveyor prefers those sewers which can be entered and cleansed, as being the most convenient, and eventually the most economical." With reference to Leeds, Mr. Bazalgette observes, that "6-inch pipes are used for a single house, and pipes from 20 inches by 15 inches, up to 24 inches by 18 inches, are used for paved courts; and that the Leeds Town Council, after a very careful inquiry at various places, have adopted the egg-shaped pipes, with socket joints." In London an examination as to the state of the pipe sewers showed, that out of 122 cases—69 on the north side of the Thames, and 53 on the south—"there were 113 in which the pipes contained deposit, which in 66 varied from 2½ inches to 7 inches in depth; 47 containing less than 2½; and the remainder were entirely choked. In 23 cases the pipes were found broken or cracked." The Metropolitan Commissioners of Sewers have therefore resolved to "abandon the back system of draining through private property, and decide that the sewers shall be laid down in the public thoroughfares; that all main lines of sewers shall be built in whole brickwork, the internal dimensions being not less than 3 feet 9 inches by 2 feet 6 inches; and that pipe sewers shall not be laid down in lengths exceeding 500 feet; and that then the smallest sewer pipe shall not be less than 9 inches internal diameter, nor more than 12 inches; each house to have a separate drain 6 inches in diameter."

Mr. Haywood, the Surveyor to the Commissioners of Sewers in the City of London, has also arrived at the conclusion, "that pipes should not be used for the main sewers of towns; and that the larger the town and the greater the traffic, the stronger is the objection to their use, as the re-opening of pavements and ground for examination, reparation, or cleansing of sewers, should be avoided by all practical means. He also recommends provision for the thorough ventilation of all sewers, whether brick or pipe."

It should be stated that Mr. Pilbrow, the Surveyor to the Local Board of Health at Tottenham, has, by paying "particular attention to the formation of the pipe-sewers, both as to quality of pipes, regularity of inclinations, carefully bedding them, flushing with abundance of

* Vide Return to the House of Commons (668), being "Copy of the Reports of Mr. Bazalgette to the Metropolitan Commissioners of Sewers, relating to the Application, State, and Examination of Tubular-pipe Drains or Sewers."

* See Minutes of Information, &c.

water at various points in the lengths, preventing the ingress of surface-grit, &c.," succeeded in keeping them clear.

Mr. Page, in his conclusions on the merits of the plan adopted at Croydon, says that "it must be accounted a *mistake*, not in using pipe sewers, but in using them to an extreme in length and in diameter, and of insufficient strength—in not providing openings for examination at frequent intervals—in neglecting any means of ventilation—in interfering objectionably with private property and domestic comfort, by adopting the system of back drainage—in not arranging the inclinations with regular gradations, and in avoiding brick sewers where these would have been advantageous. In the disposal of the sullage, which ought to have been based on its ultimate utility, the plan is objectionable in establishing a disgusting process for the separation of the solids near enough to the town to create a nuisance—in discharging the sullage into the river, which all other operations of the plan were calculated to free from impurity—in establishing irrigation by sullage water too near the town, and in not providing sufficient land drainage."

ON COMMON SALT—THE SOURCES FROM WHENCE OBTAINED, AND THE PROCESSES INVOLVED IN ITS MANUFACTURE. WITH OBSERVATIONS ON THE ORIGIN OF SALT AND OTHER SALINE BODIES.

[Continued from page 454.]

BY W. BOLLAERT, F.R.G.S.

ASIA.

TURKEY IN ASIA.—Rock salt is found in abundance in Anatolia, where there are also springs and lakes which yield salt. That of Tuziah is 100 miles in circumference, and so saline and bitter that no fish can live in it. In Karamania rock-salt is so plentiful that it is used as a building material. At Kiz large quantities of nitre are extracted from the soil. Four days' journey from Aleppo is the Valley of Salt; in winter it has a saline lake; in summer salt is met with half an inch thick.

THE DEAD SEA.—This most interesting salt lake, according to Capt. Lynch, is forty-five miles long, by ten broad, and 1316 feet below the Mediterranean. He calls its waters a nauseous compound of bitter salts. The salt of the Dead Sea is greasy, from the presence of bitumen: the mountains around it are sharp and incinerated. Salt and ashes, mingled with sand and fetid sulphurous springs, trickle down the ravines. The bottom of the sea consists of blue mud and sand, and cubic crystals of salt. The most recent analysis of the water of the Dead Sea is by Messrs. Booth and Muckle, S. G. at 60°=1.22742, taken to the United States by Captain Lynch:

Chloride of magnesium	. . .	145.8971
„ calcium	. . .	31.0746
„ sodium	. . .	78.5537
„ potassium	. . .	6.5860
Bromide of potassium	. . .	1.3741
Sulphate of Lime	. . .	0.7012
		264.1867
Water	. . .	735.8133
		1000.0000

The south shore is described as a scene of utter desolation; on one side, rugged and worn, are the rock-salt mountains of Usdum. Hitchcock, in his *Geology*, says, "At Usdum the wells of asphaltum have been set on

fire by volcanic action; volumes of steam, smoke, and suffocating vapours, have been set at liberty; perhaps, too, the remarkable ridge of rock salt called Usdum has been produced." M. de Sauley describes the plains as burnt arid deserts; the rocks are calcined, and appear as if thrown out by volcanoes; indeed, many craters of extinct volcanoes were met with, and there are considerable flows of lava. Alluding to the salt mountains of Usdum, he observes, "One upheaval might have caused the rising of this mass of salt, which is three leagues long, one league wide, and more than 100 metres high; such an upheaval must have been caused by a volcanic eruption, which destroyed simultaneously the cities of the plain: each of the ruined cities is at the base of a crater, and all these volcanoes are geologically recent." The Dead Sea appears to have no outlet, but gets rid of its waters, received by the Jordan and other streams, by solar evaporation. Nitre was found by Robinson, scattered along the base of the salt mountains; he ascertained that it was used by the Arabs for making gunpowder.

ARABIA.—Salt is so plentiful in some parts as to be used for building. Muscat exports much bay salt from its coasts.

PERSIA is probably more abundantly supplied with salt than any country in the world. It covers large tracks; the lakes, some of which are very extensive, are salt; and nearly every collection of water is impregnated with it. At Shiraz salt is obtained from adjacent lakes, which are said to be of volcanic origin. The barren island of Ormuz is almost wholly composed of salt. Much sulphate of soda is said to be met with on the eastern shores. The salt lake of Oromiah is 300 miles in circumference; the waters hold one-fifth of their weight of saline materials, and contain much sulphureted hydrogen. Five hundred parts of the water gave—

Salt		90.58
Chloride of magnesium		5.76
Chloride of calcium		0.74
Sulphate of soda		5.76
Bromine		traces
		102.84

CABUL.—Here is the extensive group known as the "Salt Range." Burns describes the salt here as being mixed with magnesia. In 1822, 80,000,000 lbs. were raised, and sold at the mines at 2s. per 50 lbs.; but the price was subsequently doubled. Dr. Fleming, who has very recently explored this district, believes that the saliferous masses have been produced by eruptive agencies. The rock salt is found in a gypseous red marl. The Punjab salt range yielded the Government in 1851 14,000*l.* annually. Rock salt exists at Kotree, in Scinde, which could be delivered near Bombay for 5*s.* per ton; but the average price paid by the Company in 1847 was nearly 2*l.* 5*s.* To the north-east of Kotree is Lake Samber, from whence a considerable portion of Upper Hindostan is supplied with salt.

HINDOSTAN.—The Runn is an extensive salt morass, communicating with the Gulf of Cutch, and in some places covered for miles with a salt incrustation; the water courses leading into the Runn are impregnated with salt. Here we have an instance of the saline matters of the ocean mixing with those of the land, and probably forming large collections of salt. British India is badly supplied with salt, in consequence of the monopoly of it by the East India Company. Bay salt, badly made, is prepared on the coast. An impure kind is imported from the Persian Gulf, and some very impure is obtained, by washing the earth, in the interior. Mr.

Aylwin, in his work on the salt monopoly in India, says, "The revolutions of Bengal in 1756 and 1765, the capture of Calcutta, with the miseries of the Black-hole, &c., were connected with iniquitous practices of monopoly." In November, 1852, when Liverpool common salt was selling, at the works in Cheshire, at 4s. 6d. per ton, a calculation was made which showed that, with the Indian duty of 2 rupees 8 annas per maund, the selling price in Calcutta was about 1½d. per pound! In the petition from Bristol against the excessive salt duty in India, it is stated that the cost of salt to the East India Company is ¼d. per pound, the Company's profit ¾d., and many of the native dealers sell it at 2½d., or 2½l. per ton! The cost of English salt does not exceed one-sixth of that manufactured in India.*

ASSAM.—Rock salt is found in the country of the Dolpos.

NEPAUL produces salt and nitre.

BAHAR.—Much nitre is washed out of the soil; that of Tihoot gives about 8 per cent. Carbonate of soda is found in abundance at Hebipore, and on the edge of the plains inundated by the Ganges.

CASHMERE.—In the table-land of Ladakh, 9,000 feet above the sea, there are many salt lakes.

CEYLON produces bay salt by natural evaporation. Dolomite is found in the interior. It is in this rock the saltpetre caves occur.

BIRMA.—Bay salt is made on the coasts. Salt, nitre, and natron, are found in the arid calcareous tracks in the interior.

JAVA contains some remarkable volcanoes, which throw out salt mud, from which salt is prepared. It is from such natural operation we must probably look for some explanation of the formation of the orbicular species of rock salt, found in Cheshire and elsewhere.

AUSTRALASIA—SUMATRA.—Bay salt is prepared on the coasts, and saltpetre is extracted from caves.

LUZON.—Rock salt is said to be met with there.

In **JAVA** much bay salt is manufactured and exported. About 35,000 tons are annually consumed in Java.

NEW HOLLAND.—Some bay salt is prepared at Sydney, but the main supply is from England. Melbourne also receives salt from England. In South Australia much salt is said to be collected in lakes. In Adelaide, in September, 1852, fine Liverpool salt was selling at 6l. per ton, the duty being 3s. per ton. Western Australia abounds in salt lakes and coal.

In the **SANDWICH ISLANDS** salt is procured from a lake in the Island of Ohau, and exported.

The **GALAPAGOS** are volcanic islands, and at the bottom of some of the craters are strong salt lakes.

TARTARY.—Much of this extensive country is covered with saline plains, yielding salt and nitre. The Dobsoon Noor, or Salt Lake, celebrated all over the west of Mongolia, furnishes salt not only to the Tartars, but to the Chinese. Muriate of ammonia is obtained from two volcanoes, one called Torfan, the other the White Mountain. It is collected by the Calmucs, and distributed through Asia.

THIBET.—Kou-kou-noor, or the Blue Lake, is 400 miles in circumference; its waters are bitter and salt. During the very severe cold weather, these waters are covered with a solid crust of ice. In the arid country of the Tsaidam Mongols, salt and borax abound. The lake from which the borax (Tincal) and salt is obtained is fifteen days' journey from Teshoo-Lombroo; it receives no rivulets, but is fed by brackish springs, rising from

the bottom of the lake. The borax is found crystallized in the lake, and though collected for a considerable time, has no appearance of diminishing. This locality is the great natural manufactory of borax, as Tuscany is of boracic acid, and as Peru (Province of Tarapaca) is for the newly discovered borate of lime. Rock salt is stated to be found in Thibet. On the surface of the dry elevated regions the production of nitre is abundant and spontaneous. There are high ridges, with volcanoes; saline, calcareous, and sulphur springs occur.

CHINA.—On the borders near Thibet are salt wells, with the addition of inflammable gas; so that Nature not only furnishes the brine, but also the fuel for evaporating the water, and extracting the salt. These wells yield a fourth or a fifth of salt. Bay salt is made in the harbour of Pekin.

AFRICA.

MOROCCO.—The rock salt mines of the interior yield a considerable quantity, and the lakes of Barbary are saline; during summer many dry up, leaving salt encrusted in their beds. Bay salt is produced naturally on its coasts.

ALGIERS.—Near Lake Maris there is a mountain of salt, and many of the chains that traverse the country contain stores of this mineral. Salt is collected from Lake Argen, in Oran. Nitre is said to be present in the soil in some localities.

TUNIS.—West of the Gulf of Khabs there is a large salt lake. In the north-east is the mountain of Hady-fah, where rock salt is found. Most of the springs in Tunis not being warm are saline.

TRIPOLI.—There are salt lagoons in the Gulf of Sidra. Trona, or carbonate of soda, is met with towards Ghadamis, and in this district there is salt and gypsum. Between Tripoli and Fezzan, trona forms a thin bed, from which thousands of tons are annually taken.

EGYPT.—Salt is found in several places in the Lybian deserts. Bilma is famed for its salt lakes and beds, from whence large quantities are taken into Nigritia.

TINDINI and WADAMI.—On the road from Tiwt to Timbuctoo, there are extensive salt beds, which form a valuable article of commerce. Near Thebes is the Natron Valley. The natron is found as a crystalline crust in lakes and pools. It is a mixture of carbonate and sulphate of soda and salt. Trona consists of the same salts as natron, except that it contains twice as much carbonate of soda. At the beginning of this century about 36,000 cwt. of natron was collected annually. Natron appears to be derived from the decomposition of rocks and soils, but being generally accompanied by salt, it is probable that it gets its soda from it. In the Sahara, salt is plentiful.

ABYSSINIA.—The plains of this country contain enormous deposits of salt, particularly at Assa Durwa. There is a great salt plain between the Red Sea and the table land of Tigré, where the mineral is from 2 feet to 3 feet thick. Lake Assal affords much salt; this lake is 570 feet below the Red Sea, and is surrounded by a volcanic country.

In **MOZAMBIQUE**, nitre is said to exist.

CAPE OF GOOD HOPE.—There are numerous natural salt-pans along the coast. The salt lakes in the interior are too distant for it to form an article of export. Brine springs are common. The Cape salt of the interior is not considered so good for preserving purposes as bay salt; and in this particular may be allied in chemical composition to the Patagonian, and some other surface deposits. It is said that about Cradock there are springs that yield nitrate of potash, and that this salt is met with in the mountainous districts. Several singular

* On 28th July, 1853, a clause was introduced into the New India Bill, to the effect that the salt monopoly should cease, which was carried by 117 against 107.—*Sec. Soc. of Arts.*

salt lakes, some of great extent, exist far in the interior, and at some elevation above the sea; the Ntwetine is 15 miles broad, and 100 miles long. The country about the great inland sea of Maravi contains much salt, both it and copper being articles of barter.

AMERICA.

BRITISH AMERICA.—In Lower Canada salt lakes and brine springs are found. The British American colonies take 2,000,000 bushels of salt from England.

ICELAND.—The waters of the Geysers contain from 14 to 17 per cent. of salt.

GREENLAND.—The heat in the few summer days is so great as to evaporate the water left among the rocks by the tide.

UNITED STATES.—In Europe gypsum and rock salt are usually found in the new red sandstone group; in this country gypsum and brine springs are mainly situated beneath the coal. Rock salt has been found for the first time in Virginia. There is first 50 feet of soil and rock, then a bed of gypsum 160 feet thick, and next the salt, which was found to be from 60 to 70 feet thick. The most important mineral springs—and there are many—produce salt containing from 10 to 45 per cent. From the Atlantic to the Appalachians and Rocky Mountains, and across into California, brine springs, salt lakes, creeks, and even rivers are met with, rendered so by means of rock salt through which water percolates. Hitchcock mentions that the majority of brine springs issue out of Silurian rocks. Nitrate of potash exists in the caves of Maryland, Georgia, and Kentucky. The recent researches of Fremont and others, during their explorations across the American continent, have taught us much as to the origin and existence of salt, and other saline bodies in those wild regions. Crossing the Rocky Mountains, and proceeding in a westerly direction, ranges of volcanic rocks are met with. Here are the Wha-satch Mountains, in which there is every reason to believe large quantities of rock salt exist, and which doubtless is the origin of the salt in the Great Salt Lake. It is near the centre of the Mormon Colony, the population of which in 1852 was 12,000. The water of this extraordinary lake is almost a saturated solution, composed of

Chloride of Sodium.....	97.80
„ Calcium.....	0.61
„ Magnesium	0.24
Sulphate of Soda.....	0.23
„ Lime.....	1.12
	100

In summer it throws down salt, in winter sulphate of soda. As a general rule, in desert countries and dry soils, saline matters will be found on the surface; such would be found on all soils, were it *not* for rains and streams percolating, carrying the soluble materials into lower lands, and from thence to the ocean. There is a mud volcano near the Great Salt Lake, from whence steam and water issues. Muriate of ammonia, carbonate of soda, alum, and sulphur, are all found about here. Lieut. Gunnison counted as many as thirteen successive beaches on the shore of the Great Salt Lake, the highest being 200 feet above the valley.

Fremont, in continuing to the west of the Salt Lake, traversed a volcanic country, meeting with boiling springs and saline lakes; and having crossed the Sierra Nevada into California, met there with salt lakes, streams, and deposits of salt. The Author cannot help suggesting here the volcanic origin of the greater part of the saline matters in these regions; a portion, however, may be due to the decomposition of rocks, containing soda,

potash, &c. If we follow Emory and his companions from Fort Leavenworth to California, similar characteristics are observed as are detailed by Fremont. All down the Rio Grande del Norte there is salt; salt streams flow into the Gila; and the country to the west is desert in places, and covered with salt, and sulphate, and carbonate of soda.

TEXAS.—On several parts of the coast, but particularly at Padre Island, the waters of the Gulf, during high tides, flow back into shallow hollows, when they evaporate, leaving a layer of salt. In the eastern part of the State, brine springs are abundant. South of Red River are many salt streams; the strata is a red sandstone, containing gypsum. There are many saline prairies in North-Eastern Texas. The western branch of the Brazos rises in a very large saline plain, formed by brine springs. In about 27° N. and 98° W. is the Texan Salt Lake, a few miles south of the Wild Horse Desert, and which supplies the Northern States of Mexico. The Lake appears to be formed by brine springs.

From July 1, 1849, to June 30, 1850, the United States exported 319,175 bushels of salt, valued at 75,013 dollars. The produce of salt of foreign countries exported from the United States during the same period was 31,046 bushels, valued at 9,668 dollars. The foreign imports of salt to the United States during the same period, the duty on which is 2s. 6d. per cwt., was 11,224,185 bushels, valued at 1,237,186 dollars. England imported 6,266,888 bushels, and the British West Indies 2,519,976 bushels. Taking the population of the United States at 25,000,000, and allowing the consumption to be 25 lbs. for each individual, this would give a consumption of 279,009 tons. If from this amount the quantity imported, 27,149 tons be deducted, there will remain 251,860 tons to be manufactured from brine springs principally. More than 6,000,000 lbs. of chloride of lime are annually imported from England and Scotland, and about 80,000 lbs. from Belgium and Ireland, valued at 175,628 dollars. The natural salt ponds on the Florida Keys yield about 100,000 bushels of bay salt.

MEXICO.—In the north are extensive saliferous plains; in the central provinces salt, and other saline bodies exist. There is much tequisquite, or impure carbonate of soda, so necessary in reducing the silver ores. The lake of Peñon Blanco alone furnishes annually more than 250,000 fanegas of unpurified salt. One of the lakes on which the city of Mexico is built is salt and bitter: the valley of Tezcuco, in which it is situated, is bounded by a circular wall of mountains of porphyry. Salt and borax are said to have been paid as a tax under the ancient Mexican emperors.

CENTRAL AMERICA, or GUATEMALA.—Some bay salt is made on its coasts. In Nicaragua is the Laguna de Salinas, shut in by perpendicular rocks. At Istatlan (land of salt) there are brine springs.

WEST INDIES.—Much bay salt is procured from the sea by solar evaporation. Snake Island yields 3,000,000 bushels annually. Bay salt is also procured from St. Martin's and Turk's Islands. It is said that rock salt has been met with in Hayti.

COLUMBIA.—Some bay salt is made on its coasts; but a large proportion is extracted from a muriatiferous clay, first worked in the peninsula of Araya. We must not confound the salt disseminated in this clay with that contained in the sands on the sea shore on the coast of Normandy. Humboldt observes that he has seen muriatiferous clay at the level of the ocean at Punta Araya, and at 2,000 toises in the Cordillera of New Grenada.

VENEZUELA.—In Maracaibo is the natron lake of Lagunilla, high up above the sea, and producing 1,600 cwt. annually. There is rock salt in Zipaquira and Chita in New Grenada.

ECUADOR is principally supplied with salt from Peru.

BRAZIL.—Some bay salt is made on the coast of Bahia by solar evaporation. There are large salt plains in Matto Grosso with their brine springs. Salt is produced from something like the muriatiferous clay of Araya in the river San Francesco, as well as in the Rio Amargoso (bitter river).

PATAGONIA.—Darwin states that 300 miles south of the River Plate is the Rio Negro, and up this river there is a salt lake, shallow in winter, and in summer converted into a field of salt. Other similar lakes occur in the vicinity; some with a floor of salt, from 2 feet to 3 feet thick, even when under water in winter. This salt is very pure, only containing 0.26 gypsum and 0.22 earthy matter, and no iodic salts. The borders of these salt lakes are formed of mud, in which numerous crystals of gypsum lie embedded; whilst on the surface others of sulphate of soda lie scattered about. The salt lakes of Siberia have similar characteristics. Near Bahia Blanca the surface of the ground is encrusted with salt. The salt here, and in other parts of Patagonia, consist chiefly of salt and sulphate of soda. Darwin and Par-chappe seem to think that these saline deposits may claim oceanic origin; but may they not rather have been washed down from the saline Andean regions and other mountain ranges, and since they have been on the plains, some of the chemical changes have gone on? Sir Woodbine Parish, in his work on Buenos Ayres, enters into the subject of so much salt being found in these localities, and states that the Great Lake Urre is salt and bitter. It is in 37°S. 66°W., and has many saline streams running into it from the Andes. Periodical expeditions have been made from Buenos Ayres to the Lake of Salinas for salt—one, in 1778, was composed of 600 wagons, 12,000 oxen, 12,600 horses, 1,000 men to load, and 400 soldiers, to prevent Indian attacks. It is probable that in the mountains to the S.E. of this lake there may be deposits of rock salt. The salt lakes and plains of the Pampas have long appeared to the Author to be formed and forming principally by the salt streams from the Andes; and on examining a good map of that region, it will be seen that these lakes have but few outlets in an easterly direction, otherwise the saline matters would flow on into the Atlantic. In the province of Tarija are the salinas of Casabindo, 45 leagues eastward of Atacama; the salt is hard and dry. At San Luis is the great salt lake of Benidero. The almost treeless Pampas extend from 22° S. to the southern limit of the American continent; much of its surface indicating the presence of saline matter. Nitrate of soda is said to exist in the provinces of La Plata. Helms, who went from Buenos Ayres to Potosi and Lima in 1789, commences by saying that the wells of Buenos Ayres are brackish. Approaching Tucuman he passed a salt desert 200 miles long; gypsum and salt being found on some of the ridges of the mountains. Large quantities of salt were met with about Potosi. Going onwards to Oruro, the country was covered with saline incrustations, composed of salt, gypsum, carbonate and nitrate of soda. Descending to Lima, saline substances were observed, and the flat valleys near Chilca were incrustated with salt. Now here is a long section, viz., from the Atlantic, across the Pampas, over the Andes to the Pacific, through arid countries, and salt is found superficially almost everywhere. This same disposition of things appears to occur

with but little variation all over the globe, being more developed in those localities where rain is not abundant; for where it is abundant, it is coheaved that it has washed, and continues to wash, the saline and soluble materials into streams and rivers, which ultimately find their way into the sea.

CHILE is principally supplied with bay salt from Peru, but British salt may be purchased at Valparaiso. In the mountains of Rancagua there is rock salt. Rock salt and salt lakes occur in several parts of the Cordillera; one is noticed by Darwin, near Copiapo, at 10,000 feet above the sea. Muriate of ammonia and much sulphur are met with in the vicinity of the various volcanoes.

BOLIVIA.—North of Copiapo is the desert of Atacama, where there is abundance of salt, containing a mountain district known as the "salt range." Dr. Reid, who crossed the desert from W. to E. in 1850, says, "Imagine a vast undulatory plain, whereon no trace of life is seen, where no insect shows itself, where no plant grows, where the stillness of the grave is only broken by the moaning of the wind, where the surface of the earth consists of a calcareous mass, out of which salt, nitrate of soda, and other saline products, show forth abundantly." In Salinas, Paria, and Lipes, there are numerous salt lakes and deposits. In Porco there are mines of rock salt at Tocallo. Cochabamba abounds in various saline materials. In La Paz, at Ayuayo, there is a brine spring, from which is produced a vast quantity of salt. Señor Pazos observes, "The saline bodies are produced without the aid of art; indeed, Peru, from its position under a tropical sun, its rains and continued droughts, seems a vast laboratory, where the great chemist, Nature, carries on her operations on the grandest scale, and leaves little for man to do." There are many lakes in the Andes, some fresh, others salt.

[To be continued.]

HOME CORRESPONDENCE.

ON PATENT RIGHT.

SIR,—Your correspondent "C. W. H." has taken time to mature his reply to my letter on Patent Right. I wrote merely *currente calamo*, and am open to rebuke if the impression has obtained that I otherwise than humbly solicited a discussion, or from any other motive than "to get at the truth."

"C. W. H.," says I am "an advocate,—an indignant advocate—of Patents." He mistakes, I do not advocate the form—nor do I invest all patentees with the character of inventors. I advocate the desirability of putting all *property* under the "protection," if we must use the term, of equal laws. By the word *property*—for we must settle our terms and speak by the card lest equivocation follow—by the word *property*, I mean land, mines, forests, watercourses, buildings, ships, machines, books, pictures, engravings, copyright of books, copyright of machines, or any other novel, or original articles useful to add to the pleasures, or to diminish the drudgery of humanity. To recognise property in matter only, and not in the mental operations which give value to matter is a mere begging of the question on the part of those who have cleverly gained possession of all the matter or material on which mind has to work. If the whole materials of earth have been embargoed by one set of people who grounded their claim on making use of them, another set might equally well claim to take them away on the ground of an improved use. But if the actual possessors say, "We

will keep the whole property in matter, and recognise no property in mind," they declare practically that those who have shall keep, and those who have not, never shall have. This would be "Capital" in the hateful form in which demagogues love to pourtray it in order to gull Labour. If mental labour of an original kind is to be common property the instant it has left the owner's mind, mental labour will be very apt to take another course and divide material property also. It will not stop at the half socialism desired by real property owners, but will begin the world anew with a whole socialism, which would equalise matters by the strong hand,—a contest in which the strongest and cleverest would vindicate the eternal laws of Nature.

If "C. W. H." had fairly read my letter, surely he would not have penned the following paragraph :

"And I would beg in the outset to draw your correspondent's attention to these latter words that I have used, because he appears to me, with submission, rather to mistake the ground of the argument throughout his letter, in treating the question too exclusively as one between patentees and the public; as though the controversy were about some aboriginal right in the former which it was threatened to deprive them of, instead of, as it really is, a question as to the solid truth of the principle upon which the State extends to Patentees the benefit, or supposed benefit, of an exception to the general policy of English law."

The simple answer to this is the following sentence in my own letter :

"Society doubtless considers it a good thing to obtain all it wants as gratuitously as possible, and would be very apt to sacrifice the interests of a small class to attain its object; nor can the small class complain of this, for society has the right to determine whether it will issue premiums or not to quicken discovery; it is a question of bargain between society and a small class endowed with peculiar faculties, and if the small class be exorbitant, society may justly say, like the Yankee, 'Upon the whole, I guess I'd rather not trade.'"

It is not a question of "Patentees" with any "aboriginal right," or any such legal question. I recognise, as well as "C. W. H.," that there are no aboriginal "rights of man." The rights of man are simply the right of the strongest, physically and mentally—

"That they should take who have the power,
And they should keep who can."

A wise ordinance of Providence to determine the progress of humanity through the agency of the strongest; and by those who obtained possession, laws were made to perpetuate possession and create legal rights. But it is a fallacy to suppose that such legal rights may not come in time to be moral wrongs. The world can only go on by moral fitness, providing that the intellect of the world, beneficially used, shall attain power and guidance. And that country must ever be on the eve of trouble, where conservative property is endowed with the power of keeping down aspiring intellect.

Let us not quibble about words. The question is, "Is it desirable for the welfare of the community that origination should be fostered and stimulated; and if so, by what process shall this best be done?"

If progress be the law of humanity, then origination is one of the most valuable qualities of the human mind; and that nation must ever take the lead which is the foremost in invention wisely conceived and carried into operation with judgment. By the word invention, I do not mean a mere contrivance suggested by a defect, and the only result of which is a patchwork, but wise forethought that detects existing evils not recognised by the

mass, and digests a plan or system to remedy the evils. Thus smoke is a nuisance; and the Legislature says, "Let the smoke be consumed." The philosophical inventor, going deeper, finds that smoke arises from the use of raw coal in which the chemical ingredients are not proportionately mixed to ensure perfect combustion, and he, after many experiments, finds out a mode of preparing fuel that will not produce smoke. As raw potatoes produce indigestion in the stomach, so raw fuel produces indigestion in the fire. How shall this benefactor be rewarded? Free trade says "Any one else might have discovered it, and he may set up a fuel factory." But he has no capital, and the coal-owners will not pay him a per-centage for his discovery. The real inventors are not called out by some growing want; they are foreseeing, and akin to prophets; and a common reproach to them is to tell them, "they are men in advance of their time." Sometimes a man of forethought points out by patent a thing obviously profitable, and his truth is instantly followed by a host of *contrivers*, like satellites around a star. This is so common, that it is a proof of the beneficial stimulus to progress by the presence of original-minded men.

"C. W. H.," says,—

"And if it can be shown that the advancement of science, and its application to the arts, is not promoted, nor the efforts of inventors encouraged, by the Patent Laws, I submit that his case is lost; and that the hardship he assumes would accrue to *bonâ fide* inventors by the abolition of the law, is illusory."

This is not so, or there would be no patentees. It is the best chance they can get, and they take it in the absence of anything better. In numberless cases the patent does not give a *quid pro quo* to the inventor: in some it does; but if it be conceded that the inventor has a moral claim on society, it would be well for society to furnish him with some better mode of reward before it takes away the little it has given him. I quote another sentence :

"I say illusory because it has been brought to experimental proof, over and over again, of late years (as if it had not been an axiom of logic and geometry thousands of years ago), that what is best for *all* is best for *each*; that the whole includes all its parts; that what is true of a class is true of all comprehended in the class."

It would probably be best for all that the whole land of the community should be divided into much smaller portions than is the case at present. It would certainly increase production; and when the landlords are convinced of this, it will be time enough to make common stock of the brains of inventors.

There is a story told by Mrs. Barbauld, of a farmer, who, in walking over his field, found a partridge's nest, and immediately broke the eggs, because he would not be allowed to eat the birds after feeding them.

Surely it is not a hard thing to imagine that a great prize occasionally drawn by an inventor must have a very considerable effect in stimulating other inventors to exercise their faculties.

Money is sought for as a means of power; and surely money cannot be in better hands than those of originators. Surely there can be no great harm in making the inheritor of large property without work pay handsomely the labours of the man who lessens the general labour, or increases the general comfort of society. It is desirable that the originators should not be at the mercy of the powerful; and while originators continue to think the Patent an advantage—as the only means of establishing their mental claim—it would be as unjust to deprive

them of the legal *right*—for it is held that “custom” is part and parcel of the law of the land—which the law has given them through a long course of years, as to break down the title of an author to his copyright on a book.

“And if ‘Cosmos’ will be good enough to accept Mr. Scott Russell’s short statement of the question, that *Patents, instead of advancing, operate as an impediment to science*, we shall have the true issue before us, without any sparring about words or phrases.”

I will accept no such thing; inasmuch as I find Mr. Scott Russell’s name once more in the Patent-list since the time that he denounced them. And even supposing he were willing to give up his patent, it would prove nothing more than that the use of a large capital gave him sufficient monopoly to defy competition.

The real use of the patent is to prevent the unjust appropriation of the repute or profit due to an originating brain by the unscrupulous possessors of power; and if “C. W. H.” affirms that it is not useful for that purpose, then let him show how best otherwise so desirable a thing may be accomplished. I am not alluding to the case of a wealthy amateur who may exhibit publicly his productions for the sake of ambition, but to that of an inventor of considerable powers, small means, and no wealthy friends.

Some three years back, on a fine summer evening, I was waiting for a steam-boat on the Blackwall pier. Two porters were conversing. A vessel of peculiar construction passed down: “That’s Mr. * * * *’s new boat!” said one. “Goes in his name!” replied the other, who belonged to the sceptical tribe of men, “but he never invented it. None of these here big swells invents, they gets somebody to do it whose name nobody knows, and then they takes all the credit. That’s how they does!” “Well,” replied the other, “I spose somebody must invent ‘em.” “Now I should like to know,” said No. 1, “who invented the first screw?” pointing to a screw steamer. No. 2, was sharp upon him; immediately exclaiming with a triumphant air, proud in his knowledge, “Why, Harkynoids, to be sure.” “Don’t believe it,” said No. 1, “depend on it there was some one else in the back-ground as was the real inwenter, and Harkynoids gave it his name, and took all the credit!” So strong was his scepticism, that had the other proclaimed the name of the inventor of Harkynoids, he would instantly have denied it, and claimed the honour for some one behind him also.

This sceptical porter was but a type of the condition of mind which has become common amongst the Helots of society,—a disbelief as to the existence of truth, or honour, or honesty amongst rulers of all grades. They have a strong perception of a widely-extended fact, that society in many of its phases is a huge sham. The chief architect, the chief engineer, must have it supposed that from their brains emanate all originality, as Minerva from the head of Jupiter. It is all like the M.P.’s speech,—theirs because they have paid, or pretended to have paid for it. In too many cases, if the subordinate dares to hint at its birth from his brain, the penalty is the loss of his situation. And it commonly happens that men of small mind are most anxious to get credit for that they have no claim to, or aptitude for. By some process or other, most commonly a business faculty, they have come to be chief of a department, and then, like Wolsey, they—

“Live not to be grieved by meaner persons.”

All human beings are born with some special aptitude. If they chance to find a position for its development, they are happy; and the world benefits by them, accord-

ing to the quality. But many persons get into positions for which they have no aptitude, though they have a liking for the profits. And thus they pass their time for the most part in preventing others from achieving the same position for which they are better fitted, and from discerning their Chief’s ignorance. Painful is the position of a youth or young man thus placed. With skill and talent he is obliged to defer to his task-master, and yet not until after a long period the chief becomes superannuated, does he get recognised, and perhaps some other business-man takes his place; for if there be one faculty which helps its owner to power more than any other it is the business faculty. The designer, the inventor, is deprived of his equitable right by a sham and a lie; and the Patent, a registered record, is the only means of preventing this. And frequently the act of patenting is regarded as a crime of *lese* chieftaincy and rebellion against lawful authority. It is inconvenient to an immoral man to recognise originality in one of lower rank. If a stranger comes before the immoral man of power with a new plan, the question is, “Is it a Patent?” If answered in the affirmative, then “It won’t do.” If no patent, still “It won’t do;” till months or years have elapsed, when, if it be useful, the chief produces it as his own, and no man can prove to the contrary. It is this wide-spread injustice which would reduce us to Chinese, if there were no escape; for the existing property-holders have taken good care to guard their own rights. What are trade marks but a monopoly of a repute gained by an individual, and held by successors, even after the merit of excellence has ceased? What are names kept up by a firm after the name has died out? An attempt at monopoly by a lie. Shams and lies are not a wholesome state of art or commerce; and patents are one of the modes whereby truth and originalities are made apparent. If there be any better modes of “rewarding ingenuities,” or something higher than the production of toys, which the phrase would seem to imply,—some clear method of stripping the masks from the “William Visors of Wincot,” and giving their due to the “Clement Perkes of the Hill,” let us have it before us, and examine it. The rough and unscrupulous have the advantage of the modest and conscientious; and I have sat at a Society of Arts’ Distribution of Prizes where a prize has been given by the Prince to a second inventor, while the original inventor was sitting by, having cast his bread on the waters, and not having arrived at one of the many days destined for him to find it.

To conclude: As a principle, I hold it advisable for a community that has appropriated all material property to hold out very handsome rewards for origination, so as to give the intelligent and aspiring their fair chance of attaining a share of this material property, for thereby they secure and increase their own stock; and if, straining too closely the conservative principle—proclaiming “what is yours of mind is *ours*, and what is mine of material wealth is *my own*”—the intelligent poor may be tempted to play out the game of this one-sided socialism to a further extent than the conservatives may desire.

As for the argument, that a monopoly granted to an individual to-day is an injury to others who might have invented the same thing to-morrow, or have it invented already in their closet; the reply is that the reward is offered in consideration of his making it patent or public, and “first come first served” is the only practical method. It is a limited monopoly, not an entailed estate. There is another mode for discoverers who like not patents, to prevent the patenting by others—that is, to

publish their discoveries to the world themselves. But till all factories are laid open, and all trade secrets disclosed, I for one shall continue to believe that the most strenuous opponents of patents do not belong to the class of men born with a special faculty for invention. The originator, the maker, the poet, the pro-creator, are specific parts of humanity, and differ as much from those possessing the mere imitative, distributive, and accumulative faculties as the oak-tree differs from the ivy or the ivy from the oak.

If "C. W. H." agrees that origination is desirable and should be rewarded in all things, books inclusive, it is incumbent on him to point out some better method than the plan of "property," which the world has hitherto deemed so useful for civilized society. If we are to come to the "Preach and Prall" principle advocated by Mr. Owen, as "C. W. H." says, "the whole includes all its parts," the principle on which Mr. Denison gives his lock to the community,—but probably not including his more valuable property in land,—it will doubtless be found that one coat and one dinner at one time will serve the inventor as well as his neighbours. But even then there will be chiefs and leaders quoted and signed by nature to guide and govern their fellows, and push the "shams" from their stools.

I am, Sir, yours,

COSMOS.

August 9, 1853.

THE DUTY ON PAPER.

SIR,—Having occupied so much of your space on previous occasions in my remarks on the paper-duty, I must apologise for intruding one or two further observations.

It is gratifying that the views expressed in my former communications should be corroborated to so large an extent by the answers received in reply to the questions proposed by the Society. The principal fault I have to find with those answers is, that in several instances the judgment of the writer has been evidently warped by a consideration of his individual interest. Some appear to think that the most important part of any Act of Parliament on the subject would be a clause to protect from loss those who might possess large quantities of paper at the period of the repeal of the duty. I believe the trade would experience such an expansion as would speedily reconcile these nervous gentlemen to any immediate loss they might sustain; but if such should not be the case, I cannot admit for a moment that the gain or loss to a few engaged in a special business should be allowed to impede the removal of a serious evil to the many.

I observe with regret that not a single answer (so far as I can perceive) has been received from Ireland. Is Ireland not interested in the question? Ireland derives the supply of nearly all its better quality papers from England and Scotland; and while England consumes immense quantities yearly of Scotch paper of good quality, the paper imported from Ireland is small in quantity and of very inferior quality. No satisfactory reason can be assigned for this state of the manufacture in Ireland. It is very desirable to obtain a return of the number of Revenue Officers partially or wholly employed in attendance on paper-mills in Ireland, and the amount of duty collected; as it may not be generally known that at some of the mills in that country one or more officers are in constant attendance, the salaries paid being a very large per centage on the duty collected—another argument for its repeal. The unsatisfactory condition of this branch of Irish industry is indicated by the fact that at the Dublin Exhibition only two Irish manufac-

turers of paper exhibit their productions. I conclude with the hope that some of your correspondents in Ireland will devote their attention to this question, and transmit to you the result of their investigation.

Yours truly,

WATMA.

PROCEEDINGS OF INSTITUTIONS.

TAMWORTH.—A meeting of the Committee of the Tamworth Library and Reading Room, over which Sir Robert Peel, Bart., M.P., presided, was held on Monday last. It was resolved, that the Annual Meeting of the Representatives of the Midland Counties Association of Mechanics' and similar Institutions should be held, under the Presidency of Sir Robert Peel, Bart., M.P., at Tamworth, on Tuesday the 20th of Sept. The Delegates from the seven Midland Counties will meet in the morning for the discussion of questions of mutual interest, and will attend a *conversazione* in the evening. Several eminent friends of the elevation of the working-classes are expected to address the company. The Committee was informed by Sir Robert Peel, that the name of the Tamworth Library and Reading Room had been inserted in the deed founding the Working Man's Peel Memorial, as an annual permanent recipient of books, pamphlets, &c., to be provided under its trusts.

MEETING FOR THE ENSUING WEEK.

SAT. Medical, 8.

MISCELLANEA.

A NATIONAL MUSEUM FOR SCOTLAND.—A few days ago, Dr. Lyon Playfair, accompanied by Baillies Fyfe, Brown, Douglas, and Boyd, inspected various sites which have been thought eligible for a Scottish National Museum, for which it is almost certain Government will be prepared by next session of Parliament to propose a grant. The County Hall, the Exchange Bank, and other places, were examined, but that which we believe has been thought most suitable is a site already spoken of—the ground near the College, including the property now occupied by the Trades' Maiden Hospital. Although Dr. Playfair has thus visited these various sites, we are not aware that his report, if he makes one to the Government, will altogether influence their determination, as it is understood that no definite decision will be come to until Mr. Cardwell satisfies himself on the subject, and for this purpose he will visit Edinburgh, we believe, soon after the prorogation of Parliament.—*Scotsman*.

PHOTOGRAPHY.—M. de Brebisson gives the following process for printing positives. He takes 7 ounces of rain or distilled water, 93 grains of chloride of sodium, or what is better, chloride of ammonium, 83 grains of tapioca de grolut; for bistre tones, 30 or 40 grains of tartaric or succinic acid may be added. The mixture is placed on the fire; and when the tapioca is dissolved, it is filtered through linen. By means of a wide, flat brush, the filtered liquid is laid evenly on strong white paper, and any streakiness is got rid of by using a large badger-hair brush worked over the paper in circles; it is then dried, and should be kept in a box. When required for use, it should be floated for five minutes on a solution of nitrate of silver, 90 grains to the ounce of water. Those who like the effect of albuminized paper may add to the mixture when cold the whites of two eggs beaten to a froth. The fineness and brilliancy, however, of an albuminized paper may be obtained by brushing the positive picture over with the following mixture: Dissolve over a gentle fire 77 grains of gum

arabic, 77 grains of isinglass or gelatine in an ounce of water, and strain it through a piece of linen. The whites are thus not rendered yellow, as is the case with albumen.

HEALTH OF WOOLLEN FACTORIES.—Professor Simpson (of Edinburgh) is at present engaged in investigating into the health of people employed in woollen factories, with a view of ascertaining to what extent the popular belief is correct, that those so employed are almost universally free of chest complaints. For that purpose schedules have been left with the different manufacturers here, for them to fill up. These schedules have reference chiefly to those who work amongst oil, and those who do not, in order, we understand, to find out whether oil has a tendency to prevent or cure pulmonary complaints. We have no doubt that our manufacturers will put themselves to some trouble in order to give a careful and correct answer to the various queries put forth by the talented and public-spirited Professor; nor have we any doubt that this investigation will lead to the establishment of the fact that employment in woollen factories is one of the most healthy, if not the most healthy, of all in-door labour, and even more healthy than most out-door work.—*Kelso Chronicle*.

PARLIAMENTARY REPORTS.

SESSIONAL PRINTED PAPERS.

Par. No. *Delivered on 4th August, 1853.*

- 818. Lighthouses—Return.
- 826. National Education (Ireland)—Copy of a Resolution.
- 833. Poor-Law (Bedminster Parish)—Copy of Memorial.
- 838. Preliminary Inquiries Act—Return.
- 861. Civil Services—Supplementary Estimate, Class 5.
- 856. Standing Orders Revision—Report from Committee.
- 860. Bill—Defacing the Coin.

Pleuro-Pneumonia in Cattle—Further Papers.

Delivered on 5th August.

- 641. Liverpool Election—Report from Committee.
- 836. Customs Duties (Colonies)—Return.
- 828 (b). Bills—Customs Consolidation—Proposed Clauses.
- 858. „ —Customs Acts Consolidation (amended).
- 852. „ —Betting-Houses (amended).
- 866. „ —Militia Ballots Suspension, and Militia Law Amendment.

Delivered on 6th and 8th August.

- 872. Trade and Navigation—Accounts.
- 768. Indian Territories—Fifth Report from Committee.
- 715. Police—Report and Evidence.
- 854. Bill—Crown Suits.
- 859. „ —Linen and Manufactures (Ireland).
- 871. „ —Registrar of Meetings.
- 873. „ —Smoke Nuisance Abatement (Metropolis), amended.
- 874. „ —Copies of Specifications Repeal (as amended in Committee, and on re-commitment).
- 875. „ —Female Convicts.
- 876. „ —Loan Societies.
- 877. „ —Apprehension of Offenders Act Amendment.
- 878. „ —Marriages, Holy Trinity Church, Hulme, Validity.
- 879. „ —Stock in Trade Exemption.
- 880. „ —Ecclesiastical Jurisdiction.
- 869. „ —Charitable Trusts (amended).
- Births, Deaths, and Marriages—Fourteenth Report of the Registrar-General.
- Prisons (Southern and Western District)—Eighteenth Report of Inspectors, Part 3.
- Public Records—Fourteenth Report of the Deputy-Keeper.
- Cuba—Correspondence.

Delivered on 9th August.

- 674. Criminal and Destitute Children—Report and Evidence.
- 640. Accidents in Coal Mines—Second Report and Evidence.
- 822 (1). Drainage (Ireland)—Returns.
- 890. Bills—Copyhold, &c., Commission Continuance.
- 891. „ —Commons Inclosure (No. 3).

Delivered on 10th August.

- 780. County and Borough Lunatic Asylums—Abstract of Accounts.
- 806. Ramsgate Harbour—Report of Sir William Cubitt.
- 837. Screw Squadron—Copies of Orders from the Admiralty, &c.
- 847. Customs (Isle of Man)—Copy of Treasury Letter.
- 850. Capture of Bruné—Copies of Sir Thomas Cochrane's Memorial.
- 862. Piracy—Return.
- 893. Bills—Entails (Scotland), Lords' Amendments.
- 899. „ —Public Works Act Amendment (Ireland), as amended in Committee).

PATENT LAW AMENDMENT ACT, 1852.

It is understood that the Commissioners of Patents have it in contemplation to issue some New Rules. They will be given in the JOURNAL as early as possible after their appearance.

APPLICATIONS FOR PATENTS AND PROTECTION ALLOWED.

From Gazette, 5th August, 1853.

Dated 30th May, 1853.

- 1330 W. Green, Islington—Preparing yarns.

Dated 20th July.

- 1716. M. Poole, Avenue-road, Regent's-park—Gas regulators. (A communication.)

Dated 21st July.

- 1724. W. Birkett, Bradford—Cleansing soap, &c., for using again for cleansing wools, &c.
- 1725. S. C. Mayer, Paris—Domino bearer.
- 1726. W. Thorp, Collyhurst, Manchester—Machinery for finishing and embossing woven fabrics.
- 1728. E. and H. and F. C. Cockey, Iron-foundry, Frome—Cheese.

Dated 22nd July.

- 1729. J. Murdoch, Staple-inn—Stamping metals. (A communication.)
- 1730. A. J. Austen, Trinity-place, Wandsworth—Mould candles.
- 1731. T. Gray and J. Reid, Newcastle—Files and rasps.
- 1732. J. Gillam, Woodstock—Cleansing corn, &c.
- 1733. G. Spencer, 12, Manor-road, Walworth—Springs for carriages.
- 1734. M. A. Rylands, Kingston-upon-Hull—Yards and spars of ships. (A communication.)

Dated 23rd July.

- 1735. C. W. Manby, 3, Grove-villas, Finchley—Travellers patent shaving-brush.
- 1736. W. Huntley, Ruswarp, Whitby—Engines worked by steam, air, or fluids.
- 1737. A. B. Lalonde, Bourdeaux—Preventing accidents on railways.
- 1738. F. Warner and J. Lee, Jewin-street—Water-closets and urinals.
- 1739. J. Hall, Bedford—Mangle.
- 1740. J. M. Napier, York-road, Lambeth—Printing-machines.
- 1741. S. Barlow, jun., Stakehill, and J. Pendlebury, Crumshall, Lancashire—Machinery for bleaching.

Dated 25th July.

- 1743. J. A. F. de Rostin, 4, South-street, Finsbury—Construction of floating bodies.
- 1744. A. Clark, Gate-street, Lincoln's-inn Fields—Regulating and indicating speed of engines.
- 1745. W. Ireland, Leek, Staffordshire—Melting iron, &c.
- 1746. J. Collins, Oxford—Paper.
- 1747. R. Bitten, Dartford—Ascertaining supply of water to steam-boilers.
- 1748. W. De la Rue, Bunhill-row—Treating tar or naphtha.
- 1749. J. Ferguson, Heathfield-works, Glasgow—Kilns for baking clay, &c.
- 1751. W. E. Newton, 66, Chancery-lane—Machinery for stopping cables. (A communication.)
- 1752. A. V. Newton, 66, Chancery-lane—Cutting tools. (A communication.)

Dated 26th July.

- 1754. F. Cole, 159, High-street, Camden-town—Lithographic press.
- 1755. F. Cole, 159, High-street, Camden-town—Inking in printing.
- 1756. — Money, Chudleigh, Devon—Bridle.
- 1757. T. Banks, Derby, and H. Banks, Wednesbury, Staffordshire—Stopping railway trains, &c.
- 1758. T. Buxton, Malton, Yorkshire—Mill for grinding.
- 1759. F. M. Lyte, Florian, Torquay—Iodide of potassium.
- 1760. J. Barrans, Peckham-lane, Deptford—Steam boilers.
- 1761. J. Giblett, Trowbridge, Wilts—Woollen and other cloths.
- 1762. L. E. Hopkins, New York—Hat-bodies of fur, &c.
- 1763. A. W. Warder, 1, Sydney-street, Brompton—Gas stoves.

Dated 27th July.

- 1764. F. Arding, Albert Iron-works, Uxbridge—Thrashing machines.
- 1766. P. A. L. C. Fontainemoreau, 4, South-street, Finsbury—Tiles for roofing. (A communication.)

Dated 28th July.

- 1768. E. Herring, Southwark—Sulphate of quinine.
- 1770. J. F. Stamford, 9, Arundel-street, Strand—Draining dwelling-houses, &c.
- 1772. B. C. Brodie, jun., 13, Albert-road, Regent's-park—Preparing black lead.

APPLICATION WITH COMPLETE SPECIFICATION FILED.

J. C. de Medeiros, Passy, near Paris—Preserving metals from corrosion. (A communication.) 1st. Aug., 1853.

WEEKLY LIST OF PATENTS SEALED.

Sealed August 3rd, 1853.

290. Thomas Spiller and Anthony Crowhurst, of Red Lion-square—Invention for propelling vessels.
291. Manoah Bower, of Birmingham—Invention of a new or improved apparatus to prevent the throwing up of mud by the wheels of vehicles.
292. John Heckethorn, of Marquis-villas, Canonbury—Invention of an improved colouring matter for coating or covering the exterior or interior of buildings, some of the ingredients of which such colouring matter is composed being capable of conversion into size, paste, and ground colour, for priming or giving the first coat or covering to work intended to be coloured with oil paint.
293. William Scarlett Wright, of Pont-street, Belgrave-square—Invention of an improved bath.
294. George John Newbery, of East Greenwich—Improvements in hinges. (A communication.)
297. John Henry Johnson, of Lincoln's-Inn Fields—Improvements in gas-burners, and in regulating the combustion of gas. (A communication.)
306. George Winiwarter, of Red Lion-square—Improvements in the application of explosive compounds.

Sealed 4th August.

313. William Walker, of Manchester—Improvements in apparatus to be employed for the purposes of drying.

Sealed 4th August.

318. George Hewitson, of Bradford—Improvements in machinery or apparatus for measuring or indicating the length of yarn as it is spun or wound on bobbins or rollers.
319. Antoine Wollowicz, of Paris—Improvements in primers for fire-arms.
321. Charles Frederic Werckshagen, of Barmen, Prussia—Improvements in the manufacture of carbonate of soda and potash.
322. André Michel Massonet, of Paris—Improvements in alloys of metals, and of other substances, and also in the application of the same to various useful purposes.
337. John Buchanan, of Leamington—Invention of an improved propeller, as to affixing the blades in the boss, and affixing the bosses to the spindle or centre shaft, and in the mode of placing it, and in controlling, lowering, and detaching the same.
355. William Fulton, of Paisley—Improvements in the treatment, cleansing, or finishing of textile fabrics.
371. George Winiwarter, of Red Lion-square—Improvements in fire-arms.
376. William Pidding, of the Strand—Improvements in crushing, drilling, or otherwise treating ores, stone, quartz, or other substances in mining operations, and in the machinery or apparatus connected therewith.
377. William Pidding, of the Strand—Improvements in the treatment of oleaginous, fatty, or gelatinous substances, for purifying, decolorizing, compounding, or clarifying the same.
414. William Pidding, of the Strand—Improvements in the treatment and preparation of saccharine substances, and in the machinery or apparatus connected therewith.
435. James Anderson, of Auchnagie—Improvements in obtaining motive power.
492. Robert Griffiths, of Great Ormond-street—Improvements in propelling vessels.
668. Malcolm Baxter, of Glasgow—Improvements in steam-engines and pressure-regulating valves.
694. John Barsham, of Kingston-upon-Thames—Improvements in apparatus for communicating between the guard and engine-driver, or other persons, in a railway train.
822. Edward Simons, of Birmingham—Improvements in telegraphing or communicating signals.
826. Henry Alfred Jowett, of Sawley—Improvements in apparatus for heating, which improvements are particularly applicable for generating steam or evaporating solutions, and may be applied for heating purposes generally.
994. William Johnson, of Lincoln's-inn Fields—Improvements in the means of retarding and stopping railway trains. (A communication.)
1056. James Greenwood, of New Accrington—Improvements in fixing mordants on fabrics.
1193. James Huggin, of Manchester—Improvements in printing or dyeing woven or textile fabrics, and in the manufacturing of certain substances to be used in the arts or processes of dyeing and printing.

1302. Julius Augustus Roth, of Philadelphia—Improvements in the mode of, and machinery for, treating the fibres of flax, hemp, China grass, and other analogous substances, preparatory to spinning. (Partly a communication.)

1366. Isaiah Kendrick, foreman to Messrs. Horton and Son, of Southwark—Improvements in steam-boilers.

1376. John James Kerr, of Gloucester-grove West, Old Brompton—Improvements in the manufacture of cartridges.

1380. William Dray, of Swan-lane—Improved method of driving shafts.

1404. John Horrocks, junior, and James Dunlop Horrocks, of Down-street, Piccadilly—Improvements in the manufacture of detonating or percussion caps. (A communication.)

1411. Joseph Smith, of Bradford, Yorkshire—Improvements in machinery for preparing and spinning wool, hair, silk, flax, and other fibrous substances.

1412. Joseph Smith, of Bradford, Yorkshire—Improvements in combing wool and other fibrous substances.

1419. Josiah Moore, of Clerkenwell-close—Improvements in respirators.

1421. Alfred Vincent Newton, of 66, Chancery-lane—Improvement in spinning machinery. (A communication.)

1458. William Baddeley, of Angel-terrace, Islington—Improved label-damper.

Sealed 8th August.

335. Auguste Edouard Loradoux Belford, of Castle-street, Holborn—Improvements in the treatment of bituminous and asphaltic matters, rendering them applicable to various useful purposes. (A communication.)

Sealed 9th August.

340. Thomas Reynolds, of Singleton-street, Hoxton, Henry Reynolds, of Hoxton, and Stephen Reynolds, of Charles-street, Westminster—Improvements in the means of retarding the progress of carriages.

390. Benjamin Greening, of Manchester—Improvements in machinery for making fences and other similar articles of wire.

470. Emile Adolphe Herrmann, of New Broad-street—Improvements in machinery for manufacturing woollen cloth. (A communication.)

474. John Hynam, of Wilson-street, Finsbury—Improvements in the mode of manufacturing wax or composition tapers, and in the machinery or apparatus for that purpose.

475. Benjamin Price, of Whitechapel—Improvements in the construction of furnaces or flues of steam-boilers, coppers, and other like vessels for heating or evaporating liquids.

532. Robert Barclay, of Montrose—Improvements in rotatory engines for obtaining motive power, and for transmitting aeriform bodies and fluids.

723. Robert Walker, of Glasgow—Improvements in working and increasing the safety of railways.

728. Thomas Smedley, of Holywell—Improvements in steam-boilers.

981. Henry Houldsworth, of Manchester—Improvements in machinery used for combing cotton, silk, silk-waste, flax, tow, wool, and other fibrous substances.

1030. Edward Bird, of Birmingham—Improvements in the construction of certain kinds of vehicles.

1099. James Walker, of Bow—Improvements in turn-tables used for railways and other purposes.

1131. Conrad William Finzel, of Bristol—Improvement in refining sugar.

1223. Bernard Peard Walker, of Wolverhampton, and James Warren, of Mile-end Road—Improvements in the manufacture of iron.

1306. Aristide Michel Servan, of Philpot-lane, London—Improvements in treating fatty matters, to render them suitable for the manufacture of candles.

1346. James Stock, junior, of Oviden—Improvements in looms for weaving.

1379. Joseph Burch, of Crag Hall, near Macclesfield—Improvements in fans, blasts, or blowing apparatus.

1416. James Robert Napier, of Glasgow, and William John Macquorn Rankine, of Rosebank House, Rutherglen, Lanark—Improvements in engines for developing mechanical power by the action of heat on air and other elastic fluids.

1423. Joseph Westwood and Robert Baillie, both of Poplar—Improvements in the construction of iron ships.

1438. Robert William Sievier, of Upper Holloway, and James Crosby, of Manchester—Improvements in looms for weaving.

1440. John Henry Johnson, of Lincoln's-inn Fields—Improvements in railway-breaks. (A communication.)

1443. Alfred Vincent Newton, of Chancery-lane—Improved mode of manufacturing cast-steel. (A communication.)

1445. Arthur Parsey, of Crescent-place, Burton-crescent—Invention of a revolving engine, to be worked by steam, air, gases, or water.

1507. William Edward Newton, of Chancery-lane—Improved manufacture of handles for knives and other similar articles. (A communication.)